WHEEL RAKES

Published 11/04 4782C

OPERATOR'S MANUAL

This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. READ, UNDERSTAND, and FOLLOW the Safety and Operation Instructions contained in this manual before operating the equipment.

ATTENCIÓN! LEA EL INSTRUCTIVO

Si No Lee Ingles, Pida Ayuda a Alguien Que Si Lo Lea Para Que le Traduzca las Medidas de Seguridad.

WHEEL RAKE/V-RAKE MODELS

(2, 4, 6, 8, & 10 WHEEL MODELS)

M&W
1020 South Sangamon Ave.
Gibson City, Illinois 60936
217-784-4261

An **Alamo Group** Company

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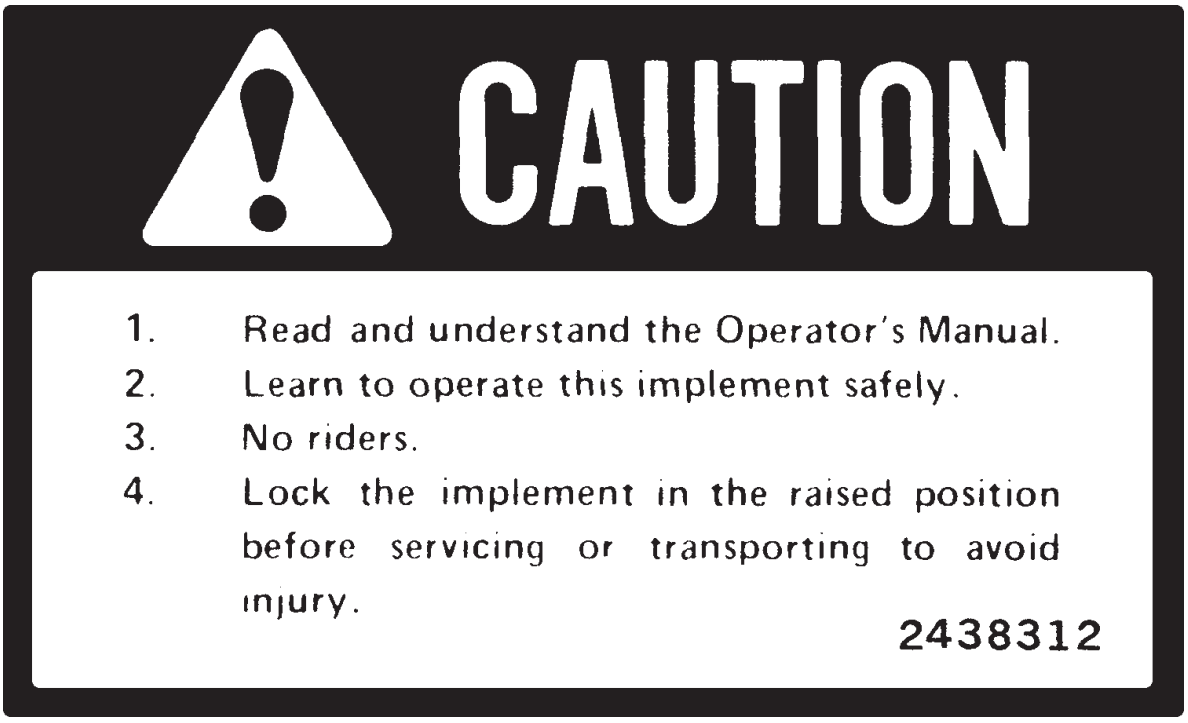
TO THE OWNER/OPERATOR/DEALER

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

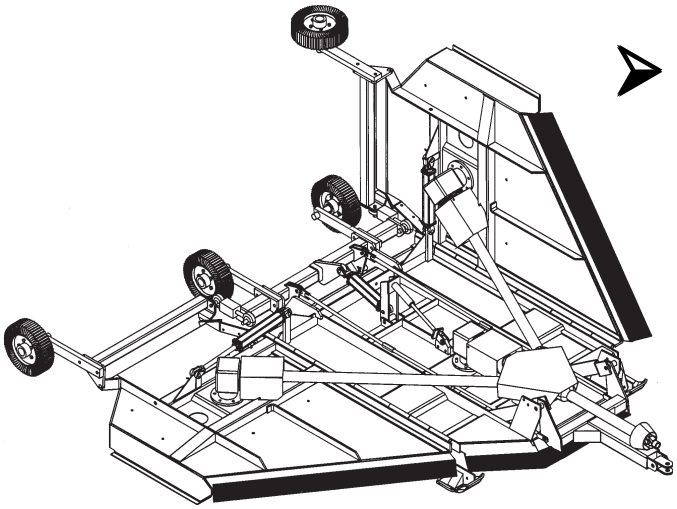
BEFORE YOU START! Read the safety messages on the implement and shown in your manual. Observe the rules of safety and common sense!


CAUTION
1. Read and understand the Operator's Manual.
2. Learn to operate this implement safely.
3. No riders.
4. Lock the implement in the raised position before servicing or transporting to avoid injury.
2438312

WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this manual. Fill out the Warranty Registration Form in full and return it within 30 days. Make certain the Serial Number of the machine is recorded on the Warranty Card and on the Warranty Form that you retain. The use of "will-fit" parts will void your warranty and can cause catastrophic failure with possible injury or death.

➢ BE SAFE!



➢ BE ALERT!

➢ BE ALIVE!

➢ BE TRAINED before operating the Mower!

RHINO M&W FUERST

Safety Training Makes the Difference

In order to reduce accidents and enhance the safe operation of mowers, *Alamo Group Ag Division*, in cooperation with other industry manufacturers has developed the AEM/FEMA Industrial and Agricultural Mower Safety Practices video and guide book.

The video will familiarize and instruct mower-tractor operators in safe practices when using industrial and agricultural mowing equipment. It is important that Every Mower Operator be educated in the operation of their mowing equipment and be able to recognize the potential hazards that can occur while operating a mower. This video, along with the mower operator's manual and the warning messages on the mower, will significantly assist in this important education.

Your Authorized *Alamo Ag* Dealer may have shown this video and presented you a DVD Video when you purchased your mower. If you or any mower operator have not seen this video, **Watch** the **Video, Read** this **Operator's Manual,** and **Complete** the **Video Guidebook** before operating your new mower. If you do not understand any of the instructions included in the video or operator's manual or if you have any questions concerning safety of operation, contact your supervisor, dealer or *Alamo Group Ag*.

If you would like a VHS video tape of the video, please email AEMVideo@alamo-group.com or Fax AEM VHS Video at (830) 372-9529 or mail in a completed copy of the form on the back of this page to AEM VHS Video 1502 E Walnut Street, Seguin, TX 78155. and request the VHS video version. Please include your name, mailing address, mower model and serial number.

Every operator should be trained for each piece of equipment (Tractor and Mower), understand the intended use, and the potential hazards before operating the equipment.

Alamo Group Ag. Division is willing to provide one (1) AEM Mower Safety Practices Video

Please Send Me:

- ☐ VHS Format – AEM/FEMA Mower Operator Safety Video
- ☐ DVD Format – AEM/FEMA Mower Operator Safety Video
- ☐ Mower Operator's Manual
- ☐ AEM Mower Operator's Safety Manual

Requester Name: _____ Phone: _____

Requester Address: _____

_____

City _____

State _____

Zip Code _____

Mower Model: _____ Serial Number: _____

Date Purchased: _____ Dealer Salesperson: _____

Dealership Name: _____ Dealership Location: _____

Mail to:

AEM Video Services
1502 E Walnut street
Seguin, TX 78155

Or Fax to:

(830) 372-9529

Or Email to:

AEMVideo@alamo-group.com

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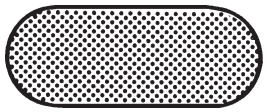
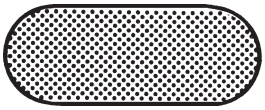
DECAL LOCATION GUIDE



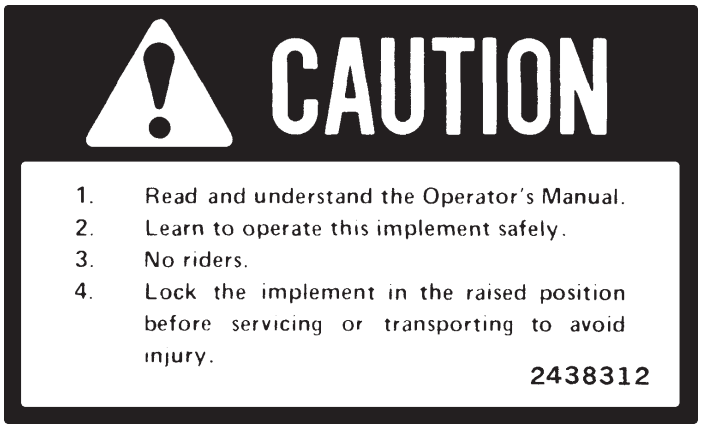
DECAL 1



DECAL 2

M&W®

DECAL 3


CAUTION
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DECAL 4

ITEM	PART NO.	QTY	DESCRIPTION
1	2738333	2	Yellow Oblong Reflector
2	2738332	2	Red Oblong Reflector
3	2558304	2	Decal, M&W
4	2438312	1	Decal, Caution Operating

NOTE: Items 1 & 2 are used on Mainframe only. See Pages 9-16 for location of all decals.

3-POINT WHEEL RAKE SPECIFICATIONS

Model	4WR 4WL	5WR 5WL	6WR 6WL	8WV	10WV
Weight (Lbs.)	396	440	540	1146	1323
Number of Wheels	4	5	6	8	10
Number of Teeth per Wheel	40				
Wheel Diameter	55"				
Tooth Diameter	9/32"				
Raking Working Width	8' 6"	11" 6"	13' 6"	17' 9"	21'
Turning and Spreading Working Width	9' 6"	12' 10"	14' 5"	----------	
Transport Width	7' 3"	7' 6"	7' 6"	11' 10"	15' 5"
Operating Speed	Up to 14 MPH				
Minimum Power Required	30HP			40HP	

SAFETY INSTRUCTIONS

When ordering parts, please specify the part number and the name of the part shown in the parts section. Please give the serial number of the machine in all correspondence. Record the serial and purchase date here for future reference.

Serial No. _____

Model _____

Purchase Date _____

Read through this manual completely, watching especially for safety symbols which alert you to possible hazards in assembly and operation . The word **"Note"** will alert you to special information such as specifications, techniques, reference information and other supplementary information. The word **"IMPORTANT** is used to point out a note which is of an immediate and urgent Safety Symbol nature.

Safety Symbol

It is the user's responsibility to read the operator's manual and comply with all instructions pertaining to operation and maintenance, It is also the user's responsibility to inspect the machine at regular intervals and repair or replace worn or damaged parts when continued use would cause damage or excessive wear to other parts. Delivery of the machine to the M&W dealer for repairs under the warranty is also the user's responsibility.

Always drive the tractor at safe speeds, especially over rough ground and slopping ground and when making a turn.

Never attempt to clean, adjust or lubricate the machine while the machine is in motion.

REMEMBER: A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

CAUTION: ALWAYS FOLLOW ALL STATE, FEDERAL, AND LOCAL WHEN TRANSPORTING. MAKE SURE SMV SYMBOL AND LIGHTS ARE IN PLACE BEFORE TRANSPORTING WHERE REQUIRED. DO NOT EXCEED 15 MPH DURING TRANSPORTING.

CAUTION: This machine should never be operated by anyone who is not familiar with the product and has not read the instruction manual. Do not operate the rake where people or animals are in the immediate area.

When changing the configuration of the rake, make sure everyone is clear of the folding and hinged parts and avoid pinch points which can cause serious injury.

IMPORTANT: When this machine is traded or sold, make sure this manual accompanies the machine so future operators will have complete operating instructions and safety warnings available to them.

Note: When left or right-hand positions are mentioned, they refer to the position as viewed from the rear of the machine while facing the tractor.

SAFETY

A safe and careful operator is the best operator. Safety is of primary importance to the manufacturer and should be to the owner/operator. Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating or servicing this mower. This equipment should only be operated by those persons who have read the Manual, who are responsible and trained, and who know how to do so safely and responsibly.

The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: **"ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!"** The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment.

Practice all usual and customary safe working precautions and above all---remember safety is up to YOU. Only YOU can prevent serious injury or death from unsafe practices.

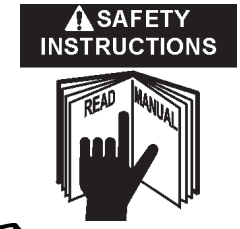
CAUTION! The lowest level of Safety Message; warns of possible injury. Decals located on the Equipment with this Signal Word are Black and Yellow.

WARNING! Serious injury or possible death! Decals are Black and Orange.

DANGER! Imminent death/critical injury. Decals are Red and White. (SG-1)

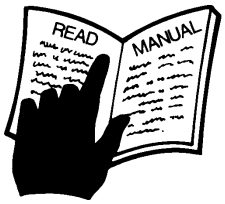
SAFETY

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards. (SG-2)



PELIGRO!

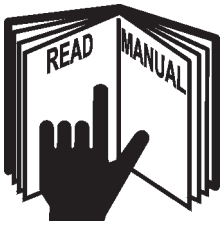
Si no lee Ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3)



¡LEA EL INSTRUCTIVO!

DANGER!

Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel too operate the Tractor and Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation. (SG-4)

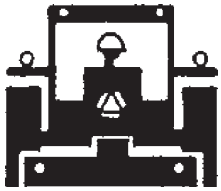


WARNING!

Always maintain the safety decals in good readable condition. If the decals are missing, damaged, or unreadable, obtain and install replacement decals immediately. (SG-5)

WARNING!

Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)



WARNING!

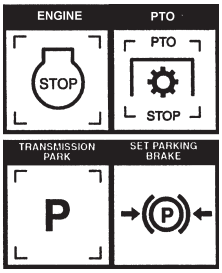
Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)

WARNING!

Do not modify or alter this Implement. Do not permit anyone to modify or alter this Implement, any of its components or any Implement function. (SG-8)

DANGER!

BEFORE leaving the tractor seat, always engage the brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only. (SG-9)



DANGER!

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)

SAFETY

DANGER!

Never allow children to operate or ride on the Tractor or Implement. (SG-11)

WARNING!

Do not mount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. (SG-12)

DANGER!

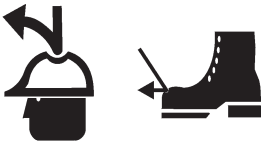
Start tractor only when properly seated in the Tractor seat. Starting a tractor in gear can result in injury or death. Read the Tractor operators manual for proper starting instructions. (SG-13)

DANGER!

Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-14)

WARNING!

The operator and all support personnel should wear hard hats, safety shoes, safety glasses, and proper hearing protection at all times for protection from injury including injury from items thrown by the equipment. (SG-16)



DANGER!

Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and its presence could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)

SAFETY

CAUTION!

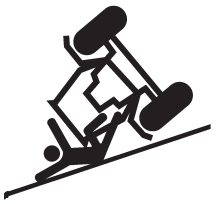
PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS! Tractors with or without an Implement attached can often be noisy enough to cause permanent hearing loss. We recommend that you always wear hearing protection if the noise in the Operator's position exceeds 80db. Noise over 85db over an extended period of time will cause severe hearing loss. Noise over 90db adjacent to the Operator over an extended period of time will cause permanent or total hearing loss. *Note:* Hearing loss from loud noise [from tractors, chain saws, radios, and other such sources close to the ear] is cumulative over a lifetime without hope of natural recovery. (SG-I7)

WARNING!

Transport only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.

Before transporting the Tractor and Implement, determine the safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum safe transport speed for you and this Equipment.
2. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum safe turning speed for you and this equipment before operating on roads or uneven ground.
3. Only transport the Tractor and Implement at the speeds that you have determined are safe and which allow you to properly control the equipment.



Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)

WARNING!

Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. Make sure the tractor engine is off before working on the Implement. (SG-20)

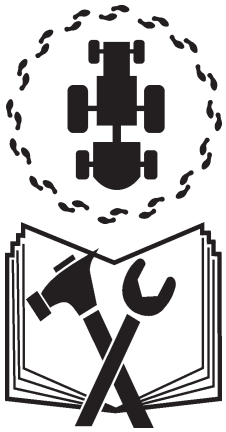
WARNING!

Always read carefully and comply fully with the manufacturers instructions when handling oil, solvents, cleansers, and any other chemical agent. (SG-22)

SAFETY

WARNING!

Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. (SG-21)



DANGER!

Never run the tractor engine or mower engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SG-23)

DANGER!

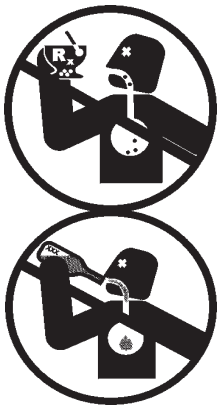
KEEP AWAY FROM ROTATING ELENENTS to prevent entanglement and possible serious injury or death. (SG-24)

DANGER!

Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be injured or killed. Children can cause the Implement to shift or fall crushing themselves or others. (SG-25)

DANGER!

NEVER use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. **NEVER** knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influnce of drugs or alcohol. (SG-27)



DANGER!

Operate the Tractor and/or Implement controls only while properly seated in the Tractor seat with the seat belt securely fastened around you. Inadvertent movement of the Tractor or Implement may cause serious injury or death. (SG-29)

WARNING!

Never leave Tractor and Implement unattended while the implement is in the lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing. To properly park the implement when disconnecting it from the tractor, lower the stand and put the retaining pin securely in place, or put a secure support under the A-Frame. Lower the implement carefully to the ground. Do not put hands or feet under lifted components. (SPT-1)

SAFETY

WARNING!

Be particularly careful when transporting the Implement with the Tractor. Turn curves or go up hills only at a low speed and using a gradual steering angle. Rear mounted implements move the center of gravity to the rear and remove weight from the front wheels. Make certain, by adding front ballast, that at least 20% of the tractor's weight is on the front wheels to prevent rearing up, loss of steering control or Tractor tip-over. Slow down on rough or uneven surfaces to prevent loss of steering control which could result in property damage or possible injury. Do not transport unless 3-Point lift lever is fully raised and in the latched transport position. Dropping implement in transport can cause serious damage to the tractor and/or Implement and possibly cause the operator or others to be injured or killed. (S3PT-2)

DANGER!

A rear Implement can fall if not properly supported. Always use the stand on the front hitch (if equipped) or block up securely to prevent falling and possible crushing injury and/or other injury from holding or lifting heavy components. Use the stand to stabilize the implement during storage. (S3PT-3)

CAUTION!

Do not back up with this implement. Backing could damage the machine or its components (S3PT-4)

WARNING!

Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines. (S3PT-5)

WARNING!

Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Implement on the ground or securely blocked up, disengage the PTO, and turn off the tractor engine. Push and pull the Remote Cylinder lever in and out several times prior to starting any maintenance or repair work. (S3PT-9)

DANGER!

This Implement is wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, serious injury, or even death. Never allow the Implement to contact obstacles. (S3PT-12)

DANGER!

Be particularly careful when transporting the Implement using the tractor. Turn curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces. (STI-1)

DANGER!

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extremecaution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement may overturn. (STI-2)

DANGER!

DO NOT allow any person under a folded wing unless wing is securely locked up or supported. **DO NOT** approach the Implement unless the Tractor is turned off and all motion has ceased. Never work under the frame work, or any lifted component unless the implement is securely supported or blocked up. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (STI-3)

SAFETY

WARNING!

Never unhitch without using the Tongue Jack. The Tongue is very heavy. Attempting to lift the Tongue without using the Tongue Jack could cause **strains or other injury.** Allowing the tongue to fall **suddenly and unexpectedly** could result in **crushing injury.** Use the Tongue Jack for **lifting the mower only.** Overloading the Tongue Jack can cause failure with possible **serious bodily injury or even death.** (STI-4)

CAUTION!

On a fully-assembled unit, do not remove the Wing Retaining Strap until hoses are attached to the tractor and the Wing Cylinders are filled with oil. Lower the Wings slowly and carefully. Keep bystanders away during operations. (STI-5)

WARNING!

Many varied objects, such as wire, cable, rope, or chains, can become entangled in the rotating parts of the Implement. These objects could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before working in the area. Remove any such objects from the site. Never allow the blades to contact such objects. (STL-6)

DANGER!

Do not operate the implement while wearing loose fitting clothing. Entanglement of the clothing with the rotating elements can result in serious injury or even death. Stay clear of all rotating elements at all times. (SSP-3)

DANGER!

There are obvious and hidden potential hazards in the operation of this Rake as in all power-driven or pulled equipment. REMEMBER! This machine is often operated in rough conditions and terrain that could include tall grass, weeds, gullies, holes, slopes, hidden obstructions and the like. Serious injury or even death may occur unless care is taken to assure the safety of the operator and bystanders in the area. Do not operate this machine with anyone in the immediate area. Stop raking if anyone comes within 25 feet of the equipment. (SSP-5)

WARNING!

Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or blade failures resulting in serious injury or death. (SG-26)

PARTS INFORMATION

M&W implement use matched system components for blades, hangers, rollers, and bearings. These parts are made and tested to M&W specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of “will fit” parts may reduce implements performance, void warranties, and present a safety hazard. Use genuine M&W mower parts for economy and safety. (SPMW-1)

SEE YOUR M&W DEALER

In addition to the design and configuration of this Implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Equipment Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Equipment. **(SG-18)**

ASSEMBLY

Your M&W Rake may come unassembled or partially assembled as required using the following instructions.

1. Install the Sector Support (8) on the 3-Point Base (1). Insert the 3-Point Cap (17) and secure in place with a capscrew and locknut through the cap and base. Lock the support plate in position on the 3-point base with a 3-point pin (10) secured with a Hairpin Cotter (9). See Illustration 1.

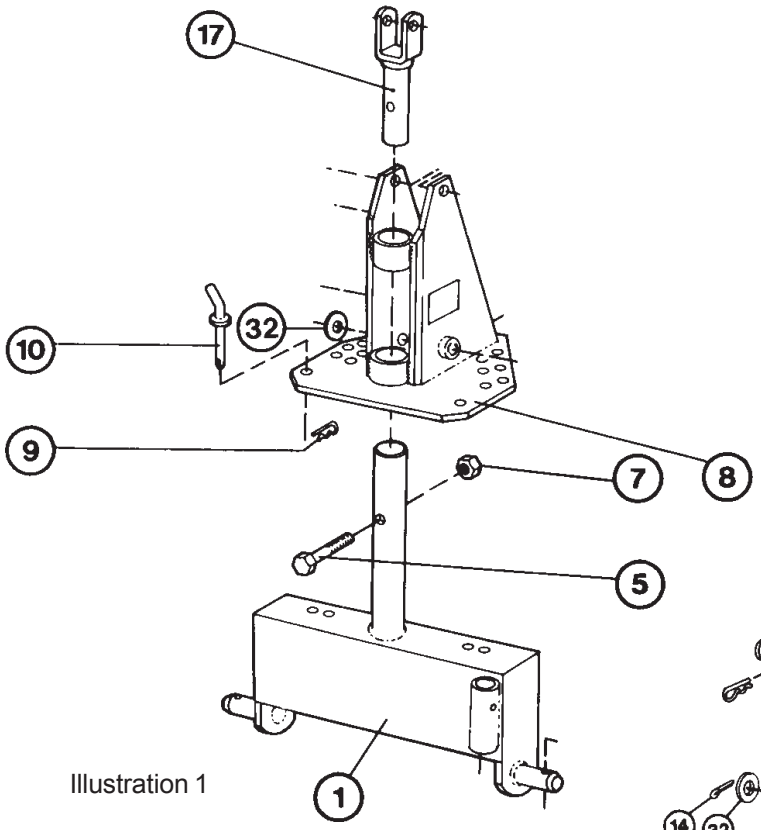


Illustration 1

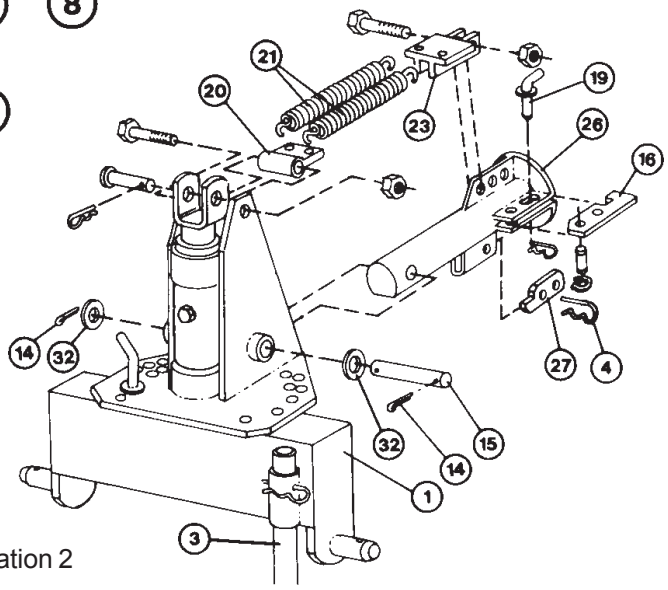


Illustration 2

2. Install the Stand (3) on the 3-point linkage and secure with a spring clip. See illustration 2.

3. With the assembly laying on the ground so the sector plate's lower socket is facing up, insert the Floating Arm (26) into the socket and secure with a Socket Secure Pin (15), two Flatwashers (32) and two Cotter Pins (14). Install the Upper Spring Mount (20) behind the third point using a capscrew and nut. Lock the floating arm in position by installing the Lock Plate (27) on the bottom of the arm and secure with a Hairpin Cotter (4). See Illustration 2.

4. Install the two Extension Springs (21) in the upper spring mount and then connect the other ends of the springs to the Lower Spring Mount (23). Secure the lower spring mount to the floating arm using a capscrew and nut. Use the center hole for the time being. After final assembly, move the lower mount if necessary to allow the rake to "float" in operation. See Illustration 2.

CAUTION: Make sure the machine is supported as the main frame and wheel arms are installed to prevent the machine from falling.

5. Insert the Main Frame (33) into the Floating Arm (26). Lock the in place by installing the Lever Plate (16) on the floating arm and secure with a pin and retaining rings. Insert a Lever Plate Pin (19) to lock the stop plate and secure with a hairpin cotter. See Illustration 3.

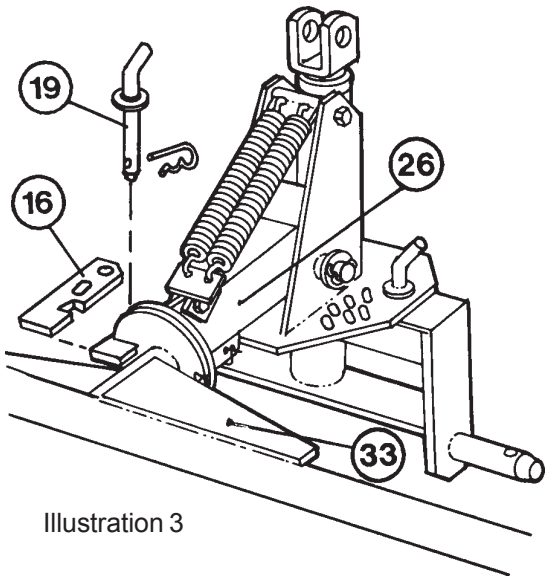


Illustration 3

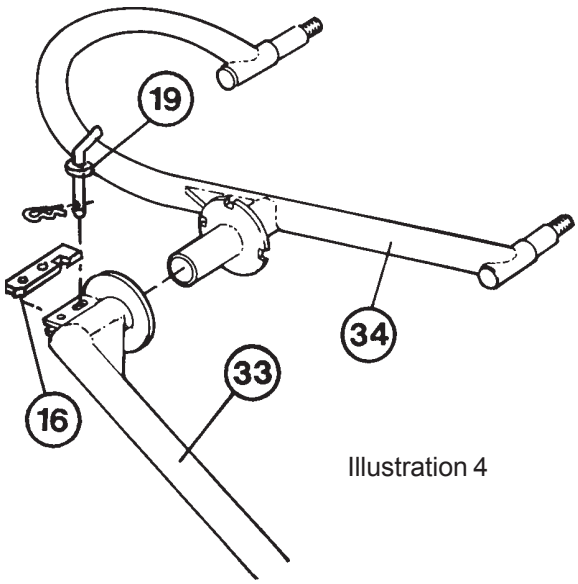
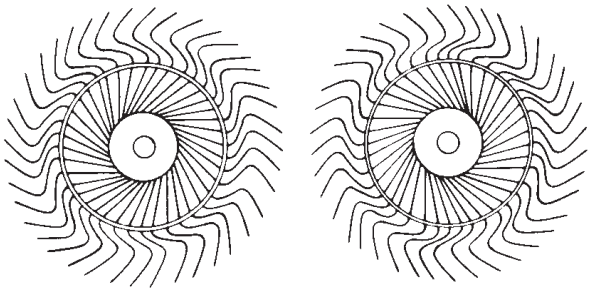


Illustration 4

6. Install the wheel Arms (34) in the main frame and secure the Lever Plates (16) with a pin and retaining rings and a lever pin secured with a hairpin cotter . See Illustration 4, On 5WR and 5WL models, install a Center Wheel Arm (49) in the main arm and secure with capscrews, lockwashers and nuts.

7. Using an overhead hoist or fork lift, carefully tip the assembly in the approximate position it will be in when installed on the tractor and high enough off the ground to install the wheels. Install the wheels on the hubs using the capscrews, lockwasher and nuts. The position of the teeth is determined by the direction of operation (See Illustration 5).

Rake wheels as viewed from the rear.



Left Rake Right Rake

Illustration 5

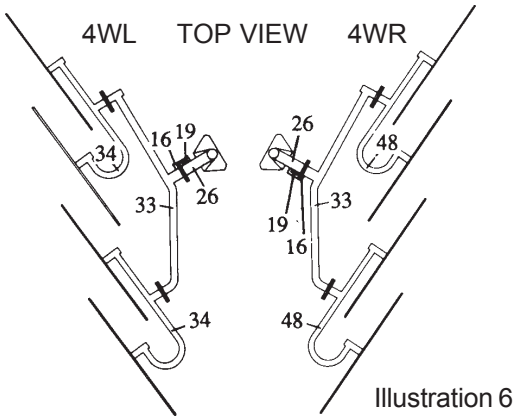


Illustration 6

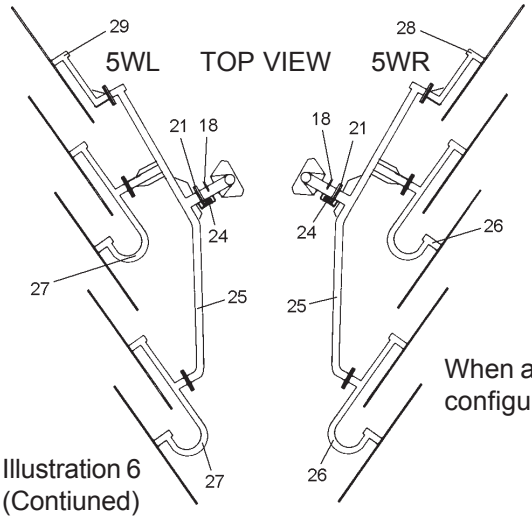


Illustration 6
(Contiuned)

When assembled, the rakes should be configured as shown in Illustration 6.

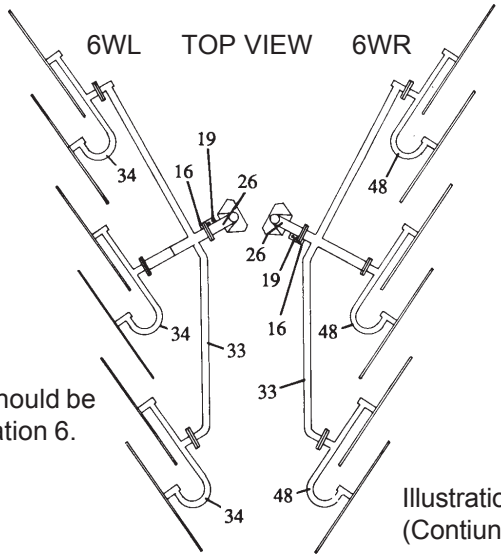


Illustration 6
(Contiuned)

CONNECTING THE RAKE TO THE TRACTOR

With the rake supported by the wheel teeth and the stand, back the tractor to the rake and connect the tractor to the 3-point linkage. After connecting to the tractor raise the machine and remove the stand from the 3-point linkage.

Raise the rake guard using the tractor hydraulics until the teeth are off of the ground. Slide the Lock Plate (27) to the rear "B" to allow the rake to "float" during operation. (See Illustration 7). This will allow the rake to adapt to irregular ground and reduce wheel damage.

IMPORTANT: The lock plate must be in the forward position "A" whenever the rake is being transported or not in operation.

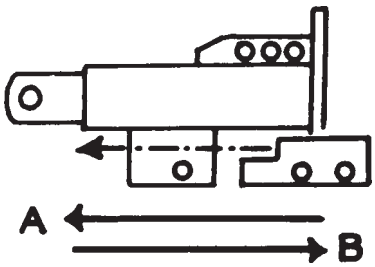


Illustration 7

OPERATION

The 3-Point Pin (10) is used to adjust the operating position of the rake. Position "A" (See Illustration 8) is used for raking position to the right. Position "B" is used for raking to the left.

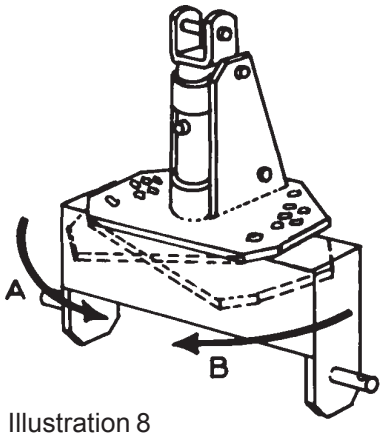


Illustration 8

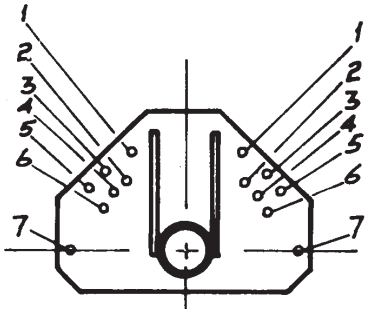


Illustration 9

By using adjustment holes 1 through 6 in the right or left positions minor adjustments can be made when raking, spreading and turning the crop. When transporting the rake, the stop pin must be installed in position 7. (See Illustration 9).

WORKING POSITIONS

Pull the pin in the sector support and turn the main frame to the right and rotate the arms so the wheels are positioned as shown below (See Illustration 10).

During operation, the wide slots in the frame and arm flanges allow the arms to oscillate slightly to prevent damage to teeth by rough ground surfaces. The narrow slots used in the transport positioning hold the arms in a rigid position.

RIGHT-HAND RAKE OPERATING POSITIONS

TURNING
Rotate the main frame to the right and the arms to the left. Lock in place with pins.

SPREADING
Rotate the main frame and arms to the left. Lock in place with pins.

RAKING
Rotate the main frame and arms to the left. Lock in place with pins.

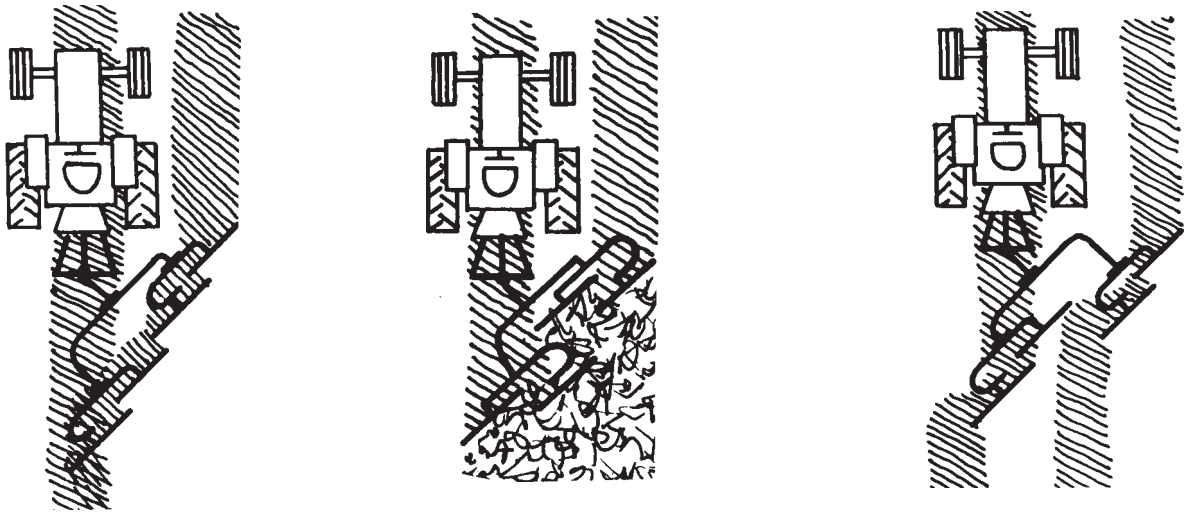


Illustration 10

TRANSPORTING

To reduce the width of the rake for transporting between fields , perform the following steps:

1. Raise the rake to the highest position.

2. Unlock the main frame at the Floating Arm (26) and rotate the frame so the forward wheel is at the top. Rotate the arms to the horizontal position. Center the rake behind the tractor.

3. Move the floating arm stop to the forward position to lock the frame in position during transporting.

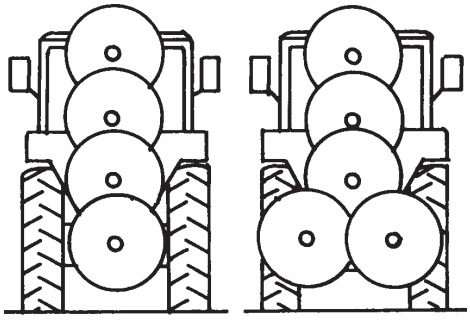


Illustration 10

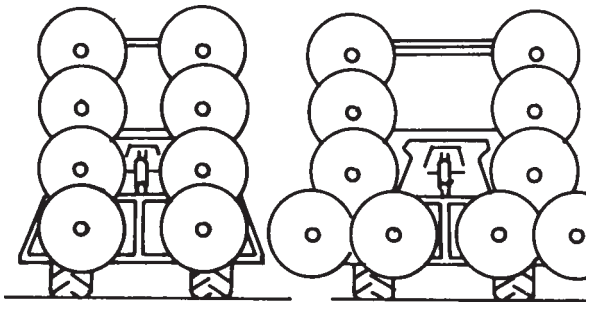


Illustration 11

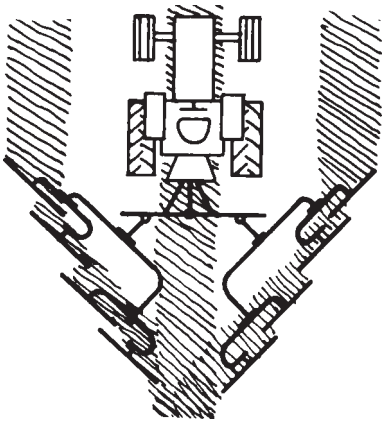
USING LEFT AND RIGHT-HAND MODELS TO MAKE A V-RAKE

1. Install the Tool Bar Frame (1) to the tractor 3-point linkage using a forklift or crane. Raise the frame with tractor's hydraulics. (See Illustration 13).

2. Install the 3-Point Upper and Lower Linkage (9 & 11) on the frame. Do not tighten bolts until all components are in place and rakes are installed so minor adjustments can be made.

3. Install the assembled left and right rakes to the toolbar frame.

The working width of the V-Rake and the width of the windrow can be changed by moving the 3-Point Upper and Lower Linkage (9 & 11) horizontally on the tool bar frame.



V-Rake in Operation
Illustration 13

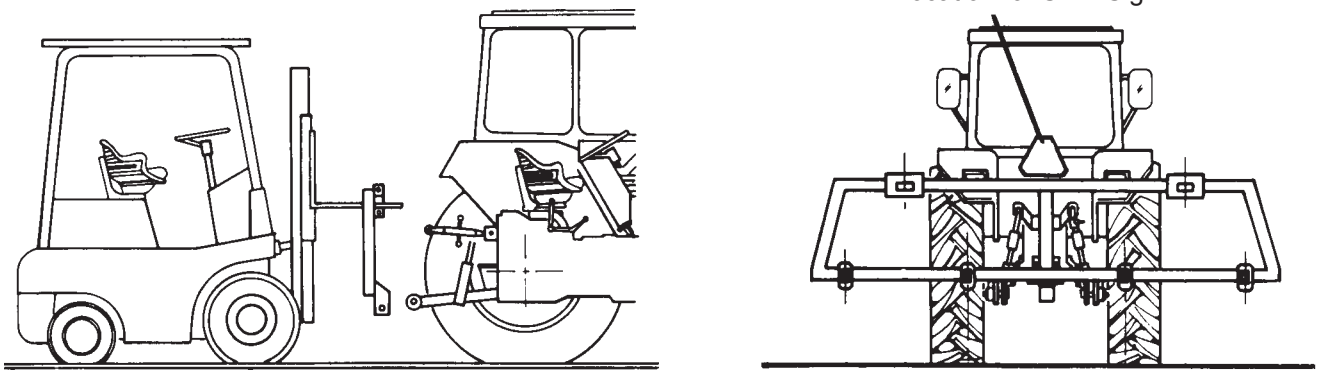


Illustration 14

IMPORTANT: Safety reflectors have bee installed on the ends of the Tool Bar Frame to warn approaching traffic of a potential hazard. Make sure reflectors are clean and in good condition at all times. Replace damaged or missing reflectors immediately.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Hay carrying over on the wheels.	Teeth not polished.	Operate rake on gravel surface for a short distance.
	Mud collected on tine ends.	Dew on hay, wait until dry. Do not run in soft, wet ground.
Tooth Breakage.	Backing with teeth in contact with ground.	Avoid backing with teeth on ground.
	Too much of rake weight on wheels. Corrosion in storage.	Raise the 3-point hitch slightly. Coat teeth with grease or oil during storage.
Rake missing hay.	Wheels running too fast.	Adjust angle at sector plate.
	Wheels not pitched back enough.	Pitch wheels back by adjusting 3-point top link.
	Teeth missing or worn.	Replace teeth. It is best to replace all teeth at the same time to maintain uniform tine height.
Rake wheels bounce excessively.	Wheels have too little ground weight.	Lower 3-point hitch.
Bent Teeth.	Backing with wheels down.	Avoid doing so.
	Excessive speed on rough terrain.	Reduce speed.
	Narrow or deep ditches or furrows, rocky ground.	Avoid or cross slowly.
	Too much weight on wheels.	Raise 3-point slightly.

MAINTENANCE

The M&W Wheel Rake requires no tools for operation and no lubrication is required except for occasional repacking of the hub bearings on the wheels. A light coating of grease applied periodically to the frame and arm pivots and flanges will allow smoother operation and retard rusting which will hinder operation.

M&W

LIMITED WARRANTY

1. LIMITED WARRANTIES

1.01. M&W warrants for one year from the purchase date to the original non-commercial, governmental, or municipal purchaser ("Purchaser") and warrants for six months to the original commercial or industrial purchaser ("Purchaser") that the goods purchased are free from defects in material or workmanship.

1.02. Manufacturer will replace for the Purchaser any part or parts found, upon examination at one of its factories, to be defective under normal use and service due to defects in material or workmanship.

1.03. This limited warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance or use of wrong fuel, oil, or lubricants, or which has served its normal life. This limited warranty does not apply to any part of any internal combustion engine, or expendable items such as blades, shields, guards, or pneumatic tires except as specifically found in your Operator's Manual.

1.04. Except as provided herein, no employee, agent, Dealer, or other person is authorized to give any warranties of any nature on behalf of Manufacturer.

2. REMEDIES AND PROCEDURES.

2.01. This limited warranty is not effective unless the Purchaser returns the Registration and Warranty Form to Manufacturer within 30 days of purchase.

2.02. Purchaser claims must be made in writing to the Authorized Dealer ("Dealer") from whom Purchaser purchased the goods or an approved Authorized Dealer ("Dealer") within 30 days after Purchaser learns of the facts on which the claim is based.

2.03. Purchaser is responsible for returning the goods in question to the Dealer.

2.04. If after examining the goods and/or parts in question, Manufacturer finds them to be defective under normal use and service due to defects in material or workmanship, Manufacturer will:

(a) Repair or replace the defective goods or part(s) or

(b) Reimburse Purchaser for the cost of the part(s) and reasonable labor charges (as determined by Manufacturer) if Purchaser paid for the repair and/or replacement prior to the final determination of applicability of the warranty by Manufacturer.

The choice of remedy shall belong to Manufacturer.

2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the Dealer to the designated factory.

3. LIMITATION OF LIABILITY.

3.01. MANUFACTURER DISCLAIMS ANY EXPRESS (EXCEPT AS SET FORTH HEREIN) AND IMPLIED WARRANTIES WITH RESPECT TO THE GOODS INCLUDING, BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3.02. MANUFACTURER MAKES NO WARRANTY AS TO THE DESIGN, CAPABILITY, CAPACITY, OR SUITABILITY FOR USE OF THE GOODS.

3.03. EXCEPT AS PROVIDED HEREIN, MANUFACTURER SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO PURCHASER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS, OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY THE GOODS INCLUDING, BUT NOT LIMITED TO, ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE GOODS OR ANY BREACH OF THIS WARRANTY. NOT WITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.

3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

4. MISCELLANEOUS.

4.01. Proper Venue for any lawsuits arising from or related to this limited warranty shall be only in Guadalupe County, Texas.

4.02. Manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

4.03. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.

4.04. Applicable law may provide rights and benefits to purchaser in addition to those provided herein.

KEEP FOR YOUR RECORDS

ATTENTION: Purchaser should fill in the blanks below for his reference when buying repair parts and/or for proper machine identification when applying for warranty.

M&W Implement Model _____ Serial Number _____

Date Purchased _____ Dealer _____

ATTENTION:
READ YOUR OPERATOR'S MANUAL

M&W
An **Alamo Group** Company
1020 South Sangamon Ave.
Gibson City, Illinois 60936
217-784-4261

TO THE OWNER/OPERATOR/DEALER

To keep your implement running efficiently and safely, read your manual thoroughly and follow these directions and the Safety Messages in this Manual. The Table of Contents clearly identifies each section where you can easily find the information you need.

The OCCUPATIONAL SAFETY AND HEALTH ACT (1928.51 Subpart C) makes these minimum safety requirements of tractor operators:

REQUIRED OF THE OWNER:

1. Provide a Roll-Over-Protective Structure that meets the requirements of this Standard; and
2. Provide Seatbelts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seatbelt while the tractor is moving; and
4. Ensure that each employee tightens the Seatbelt sufficiently to confine the employee to the protected area provided by the ROPS.

REQUIRED OF THE OPERATOR

1. Securely fasten seatbelt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going - especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.
9. When the tractor is stopped, set brakes securely and use park lock, if available.

☑ **Keep children away from danger all day, every day...**

☑ **Equip tractors with rollover protection (ROPS) and keep all machinery guards in place...**

☑ **Please work, drive, play and live each day with care and concern for your safety and that of your family and fellow citizens.**

Printed U.S.A. 4782C

An **Alamo Group** Company

M&W®
1020 S. Sangamon Ave.
Gibson City, IL 60936-9907

Please fold (do not tear), tape, and drop in any mailbox.

PLEASE FILL OUT OWNER WARRANTY REGISTRATION INFORMATION SIGN, AND DROP LAST COPY IN ANY MAILBOX.

IMPORTANT!
TO PLACE THIS WARRANTY IN EFFECT, THIS WARRANTY REGISTRATION MUST BE FILLED OUT, SIGNED, AND MAILED WITHIN 30 DAYS OF DELIVERY DATE OF THIS MACHINE. DEALER AND PURCHASER MUST SIGN.

ATTENTION: ANY CLAIM SUBMITTED TO SERVIS-RHINO® WILL BE REFUSED UNTIL COMPLETED, SIGNED WARRANTY REGISTRATION CARD IS ON FILE.

BEFORE MAILING WARRANTY CARD, MAKE SURE ALL INFORMATION IS LEGIBLE

M&W® WARRANTY REGISTRATION INFORMATION

M&W Model | Serial No. | Purchase Date (MONTH – DAY – YEAR)

Purchaser Last Name | First Name | M.I.

Street & No., RFD, Box, &/or Apt. No.

City | State or Province | ZIP

Dealer

City | State or Province | ZIP

- I have informed the Purchaser of this product of Warranty terms, provisions, and procedures that are applicable, reviewed the contents of the Operator's Manual including safety equipment, safe operation, and maintenance, reviewed the Safety Signs on implement (and tractor if possible), shown the AEM Mower Safety Practices Video, and reviewed Purchaser's responsibility to train his operators in safe operation.

- **IMPLEMENTS**: I have explained that Deflectors, Chain Guards, or Solid Skirts must be maintained in good repair and installed except in areas where persons, vehicles, livestock, or other property will not be endangered by thrown objects and where such safety equipment would prevent the mower's reasonable performance of its assigned task.

- **DRIVELINES:** I have made certain that all driveline, gearbox, and other shields are in good repair and fastened securely in place to prevent injuries from entanglement or thrown objects.

- **HYDRAULIC MACHINES:** I have explained the necessity of using clean hydraulic oil, changing filters as instructed, stopping leaks, damage caused by operating with over-heated oil, caring for hoses, using hoses of proper rating, the necessity of maintaining the specified operating pressure, and the potential hazard of oil's penetrating the skin.

- **BOOM-TYPE or FOLDING-TYPE IMPLEMENTS:** I have explained that it is not possible to guard against thrown objects when the head is lifted off ground and that operator is responsible to watch out for persons in the area. I have explained that the lifted mower head or boom can contact overhead obstructions with damage to cables and telephone lines and possible injury. I have explained that the extended head or boom or retracted boom can contact power lines with resulting electrocution injury or death and that operator is responsible for keeping clear of such hazards.

Dealer's Signature _____ **Date** _____

I have been instructed on the paragraphs above, received and have been shown the AEM Mower Safety Practices Video and have been instructed in the contents of the Operator's Manual including safety signs, safety equipment, safe operation, maintenance, and the potential hazards of unauthorized alteration or modification of the product. I have been informed of the warranty provisions and know that the warranty is not in effect until this form is received by Alamo Group.
I understand the Implement Guarding statements above and the potential hazards of operating without such guards. I understand that the operator is responsible for the safety of others in the area. I have examined the product and accept it as being complete and in satisfactory condition with all required guards.

Purchaser's Signature _____ **Date** _____

Do not tear. Do not tear.

PRE-DELIVERY SERVICE
CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS
- ☐ Gearboxes & Speed Increaser (Oil Levels)
- ☐ Hydraulic Oil Level (External. Tank)
- ☐ Tractor Hydraulic Oil Level
- ☐ Hydraulic Hoses (No Kinks, Binds, or Leaks)
- ☐ Hydraulic Hose Connections are Tight (No Leaks)

MOWER
- ☐ Spindle And Motor Bolts Properly Torqued
- ☐ Spindle Housing Bearings are lubricated
- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ All Hardware Properly Torqued
- ☐ Tire Air Pressure / Lug Nuts (Correct Torque)
- ☐ Wheel Bearings (Check, Grease, And Preload)

ATTACHMENTS & INSTALLATION
- ☐ Thrown Object Deflectors Front And Rear
- ☐ Correct Blade Rotation Direction
- ☐ Wing transport locks and latches
- ☐ Mower head transport support bracket
- ☐ All Bolts - Pins And Nuts (Proper Torque)

MOWER TO TRACTOR CONNECTION
- ☐ Draw Bar Length (Check And Set)
- ☐ Axle Height (Adjusted)
- ☐ Cutting Height (Adjust)
- ☐ Mount Kit Pre-Operation Check Complete
- ☐ Mower Wing (Adjust Level With The Center)
- ☐ Mower Wing (Check For Proper Raising Operation)
- ☐ Pull Type Hitch (Height Adjustment)
- ☐ Mounting Hardware Properly Torqued

SAFETY ITEMS
- ☐ Protective Shields (Operation And Installation)
- ☐ S.M.V. Emblem (Installed)
- ☐ Neutral Safety & Cut - Off Switches work properly
- ☐ Safety Decals (Installed in good condition)
- ☐ Operator's Manual (Supplied in Canister)
- ☐ AEM Mower Safety Manual (Supplied in Canister)
- ☐ **AEM Mower Safety Video has been shown to Purchaser** _____ Pur. Intitials
- ☐ **AEM Mower Safety Video has been presented to Purchaser** _____ Pur. Intitials

Purchaser's Signature _____ **Date** _____ **Dealer's Signature** _____ **Date** _____

TEAR • TEAR • TEAR •

1. PRINT FIRMLY. 2. REMOVE WHITE COPY FOR CUSTOMER RECORDS. 3. REMOVE YELLOW COPY FOR DEALERS RECORDS. 4. MAIL LAST CARD POSTAGE FREE.

M&W® WARRANTY REGISTRATION INFORMATION

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Purchaser Last Name | First Name | M.I.

Street & No., RFD, Box, &/or Apt. No.

City | State or Province | ZIP

Dealer

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DEALER COPY

Purchaser's Signature _____ **Date** _____

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CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS
- ☐ Gearboxes & Speed Increaser (Oil Levels)
- ☐ Hydraulic Oil Level (External. Tank)
- ☐ Tractor Hydraulic Oil Level
- ☐ Hydraulic Hoses (No Kinks, Binds, or Leaks)
- ☐ Hydraulic Hose Connections are Tight (No Leaks)

MOWER
- ☐ Spindle And Motor Bolts Properly Torqued
- ☐ Spindle Housing Bearings are lubricated
- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ All Hardware Properly Torqued
- ☐ Tire Air Pressure / Lug Nuts (Correct Torque)
- ☐ Wheel Bearings (Check, Grease, And Preload)

ATTACHMENTS & INSTALLATION
- ☐ Thrown Object Deflectors Front And Rear
- ☐ Correct Blade Rotation Direction
- ☐ Wing transport locks and latches
- ☐ Mower head transport support bracket
- ☐ All Bolts - Pins And Nuts (Proper Torque)

MOWER TO TRACTOR CONNECTION
- ☐ Draw Bar Length (Check And Set)
- ☐ Axle Height (Adjusted)
- ☐ Cutting Height (Adjust)
- ☐ Mount Kit Pre-Operation Check Complete
- ☐ Mower Wing (Adjust Level With The Center)
- ☐ Mower Wing (Check For Proper Raising Operation)
- ☐ Pull Type Hitch (Height Adjustment)
- ☐ Mounting Hardware Properly Torqued

SAFETY ITEMS
- ☐ Protective Shields (Operation And Installation)
- ☐ S.M.V. Emblem (Installed)
- ☐ Neutral Safety & Cut - Off Switches work properly
- ☐ Safety Decals (Installed in good condition)
- ☐ Operator's Manual (Supplied in Canister)
- ☐ AEM Mower Safety Manual (Supplied in Canister)
- ☐ **AEM Mower Safety Video has been shown to Purchaser** _____ Pur. Intitials
- ☐ **AEM Mower Safety Video has been presented to Purchaser** _____ Pur. Intitials

Purchaser's Signature _____ **Date** _____ **Dealer's Signature** _____ **Date** _____

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1. PRINT FIRMLY. 2. REMOVE WHITE COPY FOR CUSTOMER RECORDS. 3. REMOVE YELLOW COPY FOR DEALERS RECORDS. 4. MAIL LAST CARD POSTAGE FREE.

M&W® WARRANTY REGISTRATION INFORMATION

M&W Model ____ Serial No. ____ Purchase Date MONTH ___ DAY ___ YEAR ___

Purchaser Last Name ____ First Name ____ M.I. ___

Street & No., RFD, Box, &/or Apt. No. ____

City ____ State or Province ___ ZIP ___

Dealer ____

City ____ State or Province ___ ZIP ___

- I have informed the Purchaser of this product of Warranty terms, provisions, and procedures that are applicable, reviewed the contents of the Operator's Manual including safety equipment, safe operation, and maintenance, reviewed the Safety Signs on implement (and tractor if possible), shown the AEM Mower Safety Practices Video, and reviewed Purchaser's responsibility to train his operators in safe operation.

- **IMPLEMENTS**: I have explained that Deflectors, Chain Guards, or Solid Skirts must be maintained in good repair and installed except in areas where persons, vehicles, livestock, or other property will not be endangered by thrown objects and where such safety equipment would prevent the mower's reasonable performance of its assigned task.

- **DRIVELINES:** I have made certain that all driveline, gearbox, and other shields are in good repair and fastened securely in place to prevent injuries from entanglement or thrown objects.

- **HYDRAULIC MACHINES:** I have explained the necessity of using clean hydraulic oil, changing filters as instructed, stopping leaks, damage caused by operating with over-heated oil, caring for hoses, using hoses of proper rating, the necessity of maintaining the specified operating pressure, and the potential hazard of oil's penetrating the skin.

- **BOOM-TYPE or FOLDING-TYPE IMPLEMENTS:** I have explained that it is not possible to guard against thrown objects when the head is lifted off ground and that operator is responsible to watch out for persons in the area. I have explained that the lifted mower head or boom can contact overhead obstructions with damage to cables and telephone lines and possible injury. I have explained that the extended head or boom or retracted boom can contact power lines with resulting electrocution injury or death and that operator is responsible for keeping clear of such hazards.

Dealer's Signature _____ **Date** _____

I have been instructed on the paragraphs above, received and have been shown the AEM Mower Safety Practices Video and have been instructed in the contents of the Operator's Manual including safety signs, safety equipment, safe operation, maintenance, and the potential hazards of unauthorized alteration or modification of the product. I have been informed of the warranty provisions and know that the warranty is not in effect until this form is received by Alamo Group.
I understand the Implement Guarding statements above and the potential hazards of operating without such guards. I understand that the operator is responsible for the safety of others in the area. I have examined the product and accept it as being complete and in satisfactory condition with all required guards.

CUSTOMER COPY

Purchaser's Signature _____ **Date** _____

PRE-DELIVERY SERVICE
CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

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Purchaser's Signature _____ **Date** _____ **Dealer's Signature** _____ **Date** _____

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